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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER LLP
901 NEW YORK AVENUE, NW
WASHINGTON, DC 20001-4413

EXAMINER	
FRANK, RODNEY T	

ART UNIT	PAPER NUMBER
2856	

DATE MAILED: 01/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/069,351	KINGSTON ET AL.	
	Examiner	Art Unit	
	Rodney T. Frank	2856	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 November 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *31-58,60-78 and 80-114* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *78,80-93,100,105,109,111 and 112* is/are allowed.

6)☒ Claim(s) *31-37,39-58,60-65,67-77,97-99,101-104,106-108,110,113 and 114* is/are rejected.

7)☒ Claim(s) *38,66 and 94-96* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *11/23/2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claims 94-96 are objected to because of the following informalities: It is unclear as to what they are exactly referring to, as the claims are narrative in nature and don't explicitly recite what exactly being claimed. Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. Claims 47-49, and 75-77, are rejected under 35 U.S.C. 112, second paragraph, as being indefinite in that it fails to point out what is included or excluded by the claim language. This claim is an omnibus type claim. It is unclear as to what exactly these claims are referring, specifically claims 47, and 75.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless -
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 31-33, 42, 58, 60, 61, and 70 are rejected under 35 U.S.C. 102(b) as being anticipated by Katayama et al. (U.S. Patent Number 4,923,586; hereinafter referred to as Katayama). Katayama discloses an enzyme electrode unit having, on the surfaces of the base electrodes thereof, an enzyme-immobilized membrane for oxidizing or reducing a target substance to be measured, and a diffusion-limiting membrane unit of a two-layer structure disposed on the surface of the enzyme-immobilized membrane, only the diffusion-limiting membrane having a lower target substance diffusion limiting effect being replaceable, thus maintaining substantially constant the general target substance diffusion limiting effect of the diffusion-limiting membrane

unit, even after the replaceable diffusion-limiting membrane has been replaced (Please see the abstract).

5. In regard to claim 31, Katayama discloses and shows specifically with regard to figures 1 and 6, a passive sampling device for monitoring over a period of time micropollutants in an aquatic environment, which device comprises a diffusion-limiting membrane contactable in use with the aquatic environment to be monitored and adapted to allow rate-limited diffusion therethrough of the micropollutants (8), and a receiving phase (comprising membranes 4, 5, and 6) having a sufficiently high affinity for the micropollutants for receiving and retaining the micropollutants, wherein the receiving phase is

(i) a removable unitary element

(ii) separated from the aquatic environment by said membrane,

(iii) comprised of a solid phase material immobilized by being bound in or to a hydrophobic solid support. (Also, see column 1 lines 8-13 whereby Katayama discloses the use of the device for measuring a substance as limited in diffusion guided to an enzyme immobilized membrane.) The examiner will admit that the device as disclosed is primarily concerned with enzymes, specifically glucose. However, since Katayama discloses from column 12 lines 63 through column 13 line 2 that the measurements of other macromolecules can be made, then the application to micropollutants would also be disclosed in view of the Katayama reference.

In reference to claims 32-33, the use of the polycarbonate membrane for the diffusion limiting membrane, as disclosed, for example, in column 1 lines 43-50, would disclose the solid carrier which does not retain water and contains less than 1% water whereby said support is not subject to loss of water and hence changes in dimension.

In reference to claim 42, figures 1 and 6 show the receiving phase in the form of a disk.

In reference to claim 58, this claim is essentially the same as claim 31, which was discussed in detail above, except there is the added limitation of the diffusion limiting membrane comprising a solid, hydrophobic polymeric material capable of determining the rate of diffusion of the micropollutants therethrough. Since the Katayama reference utilizes two separate diffusion-limiting membranes whereby, as disclosed in claim 1 that the two diffusion limiting membranes have different limiting effects, then it would be disclosed that one must be able to determine diffusion rates of the membranes so that one can ensure that the diffusion rates are different in order to operate the device according to it's disclosed best mode of operation.

Claims 60 and 61 are duplicates of claims 32 and 33, except they depend from claim 58. Since claims 32 and 33 are described at length above, claims 60 and 61 are deemed to be disclosed in view of Katayama.

Claim 70 is an essential duplicate of claim 42, except it depends from claim 58. Since claim 42 is described at length above, Claim 70 is deemed to be disclosed in view of Katayama.

In reference to claim 97, this claim is essentially the same as claim 31, which was discussed in detail above, except there is the added limitation of the diffusion limiting membrane comprising a solid, hydrophobic polymeric material capable of determining the rate of diffusion of the micropollutants therethrough. Since the Katayama reference utilizes two separate diffusion-limiting membranes whereby, as disclosed in claim 1 that the two diffusion limiting membranes have different limiting effects, then it would be disclosed that one must be able to determine diffusion rates of the membranes so that one can ensure that the diffusion rates are different in order to operate the device according to it's disclosed best mode of operation.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 50-57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Katayama et al. With regard to the method disclosed in claims 50-57, since the device is deemed to be disclosed, though the method of using said device is not explicitly spelled out, it is deemed to be disclosed since one of ordinary skill in the art would have to be able to use a device that has been disclosed.

8. Claim 114 is essentially the same as claim 31, which is described in detail above, though the Katayama reference does not specifically disclose that the device is placed in contact with the aquatic environment, whereby the sample is received and then analyzed. However, the examiner deems those would be inherent limitations of the Katayama device in order for it to work as intended and would therefore be deemed as disclosed in view of the reference.

9. Claims 34-41, 44, 45, 62-65, 67-69, 72, 73, 97-99, 101, 102, 103, 104, 106, 107, 108, 110, 111, and 113 are rejected under 35 U.S.C. 103(a) as being unpatentable over Katayama et al., as applied to claims 31-33, 42, 50-57, 58, 60, 61, 70, and 114 above, and further in view of Ho et al. (U.S. Patent Number 5,552,053; hereinafter referred to as Ho). Ho discloses a solid poly-amphiphilic polymer. The polymer may be (1) a continuous film (a) which is strengthened sufficiently by cross-linking to be used alone and/or supported on a frame, (b) overlaid and/or cast on a porous hydrophobic support or (2) introduced into the pores of a microporous hydrophobic

membrane. The present invention is also a process for selectively removing a dissolved species (solute or target compound) from an aqueous solution or from a gaseous stream comprising contacting said aqueous solution or gaseous stream having the dissolved species and an aqueous stripping solution or other means for removing said species with opposite sides or surfaces. (Please see the abstract). The motivation to combine the teachings of Ho with the teachings of Katayama is two fold, first, both references are related based on the fact that Ho discloses n invention related to diffusion through a membrane , would be relevant to the disclosure of Katayama. Second, since Katayama discloses the use of a polycarbonate diffusion membrane, Ho discloses that polycarbonate is but one of may types of membranes that may be used for diffusion applications (see column 2 lines 9-16 of the Ho reference for polycarbonates and other membranes that may be used.)

With respect to claim 34, the use of polyethylene with the membrane is disclosed in column 2 line 15 of Ho.

With respect to claims 35 and 36, the use of polysulphone/ polysulfone, polycarbonate, cellulose acetate, PTFE, and glass fiber is disclosed in column 2 in lines 9-25 of Ho.

With respect to claim 37, the membrane being associated with a molecular charge sensitive material is disclosed in column 4 lines 39-49 of Ho.

With respect to claims 39-41, though the specific thickness of the membrane is not disclosed, column 11 lines 30-35 of Ho disclose information with regard to membrane thickness whereby the actual thickness of the membrane would be a design choice well within the preview of one of ordinary skill in the art.

With regard to claims 44 and 45, the support comprising a matrix of hydrophobic fibers is disclosed.

With regard to claims 62-65, these claims are essentially duplicates of claims 34-37, which are discussed above in more detail.

With regard to claims 67-69, these are essentially the same as claims 39-41, which are described in more detail above.

With regard to claims 72 and 73, these claims are essentially the same as claims 44 and 45, which were discussed earlier in this rejection.

Claims 97, 99 are essentially the same as claim 31, except it specifically discloses the use of a membrane made of various materials. Since these materials are disclosed in the Ho reference as suitable, then the examiner feels that in light of the discussion of claim 31 earlier, these claims are rejected in view of the teachings of Katayama and Ho.

Claims 101-104, 106-108 are all method claims which are directed towards methods of various embodiments claimed in the present application. It is the opinion of the examiner that since the various apparatus or devices associated with the various methods are deemed as disclosed, then one of ordinary skill in the art would be aware of the method to operate such a device.

10. Claims 43, 46, 71, 74, 90, 93, 98, 110, and 113 are rejected under 35 U.S.C. 103(a) as being unpatentable over Katayama et al., as applied to claims 31-33, 42, 50-57, 58, 60, 61, 70, and 114 above, and further in view of Ho et al., as applied to claims 34-41, 44, 45, 62-65, 67-69, 72, 73, 97-99, 101, 102, 103, 104, 106, 107, 108, 110, 111, and 113, and further in view of Markell et al. (U.S. Patent Number 5,328, 758; hereinafter referred to as Markell). Markell discloses a particle loaded, porous, fibrous compressed or fused article comprises a nonwoven fibrous polymeric web, which preferably is thermoplastic, melt-extrudable, and pressure-fusible blown microfibrous web, and sorptive particles enmeshed in said web, the particle loaded fibrous article has a Gurley

number of at least two seconds, and the article is useful in separation science. A method of preparation of the article and method of use is also disclosed (please see the abstract). The motivation to combine these two references can be found in the Ho reference in that Ho states in column 10 lines 39-54 that any hydrophobic microporous material can be used with the inventions disclosed by Ho and Katayama. Markell discloses another type of microporous material that lends specific relevance to the present invention. For the sake of not being repetitive, the examiner will not address the claims that were previously discussed in detail here.

11. With regard to claim 43, Markell discloses in column 7 lines 1-43 the use of C_8 or C_{18} hydrocarbon groups bound with a silica-based polymer.

With regard to claim 46, the use of a mesh is disclosed in column 15 line 3 of the Markell reference.

With regard to claims 71 and 90, and 74 and 93, these claims are the same in scope as claims 43 and 46 respectively, which were previously presented and are therefore discussed in more detail above.

With regard to claim 98, this claims are merely a rehash of the above claims, except, where applicable, various limitations that are discussed in previous claims are now combined into the generic base claim 31 in such a fashion as to produce a more specific claim in order to distinguish over a previous claim (fro example, the C_8 to C_{14} chain). It is the opinion of the examiner that since these claims have been discussed at length above, and then combining certain limitations of the dependent claims of claim 31 into claim 31 does not render the claim as patentable over the prior art since the combination of claims is already rendered obvious to one of ordinary skill in the art. Further, with regard to claims 110 and 113, since the apparatus claims are rendered obvious then

the method of using that specific devices, in view of the rejections above of the device claims would also be obvious to one of ordinary skill in the art.

Allowable Subject Matter

12. Claims 38 and 66 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

13. Claims 78, 80-93, 100, 105, 109, 111, and 112 are allowed.

14. The following is a statement of reasons for the indication of allowable subject matter:

15. Claims 78 and 111 are allowed due to the diffusion limiting membrane having pores traversing the membrane in a direction substantially at right angles to the plane of the membrane with a specific diameter, in combination with all other limitations of the independent claims.

Claims 100, 109, and 112 are allowed due to the various materials, which can be selected for the molecular charge selective material of the diffusion membrane in combination with all other limitations of the independent claim.

Claim 105 is allowed due to the various materials, which can be selected for the coating or impregnating of the receiving phase, in combination with all other limitations of the independent claim.

Conclusion

16. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The examiner has cited various references that are deemed relevant to the general state of the art of the present invention.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rodney T. Frank whose telephone number is (571) 272-2193. The examiner can normally be reached on M-F 9am -5:30p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron E. Williams can be reached on (571) 272-2208. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

RTF
January 23, 2005

HEZRON WILLIAMS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800